6144711

Input Data

2

Encoder & Interleaving

10

Training Symbol Injection

20

Tx Space-Freq. Pre-processor

30

Modulation & RF System

40

Tx Antenna Array

50

FIG. 1

FIG. 2

Output Data

Decoder & Deinterleaving

150

Channel ID

130

Receiver Space-Freq. Processor

140

Demodulation & RF System

120

110

Rx Antenna Array

FIG. 3

APPROVED BY DRAFTSMAN

O.G. FIG. 14

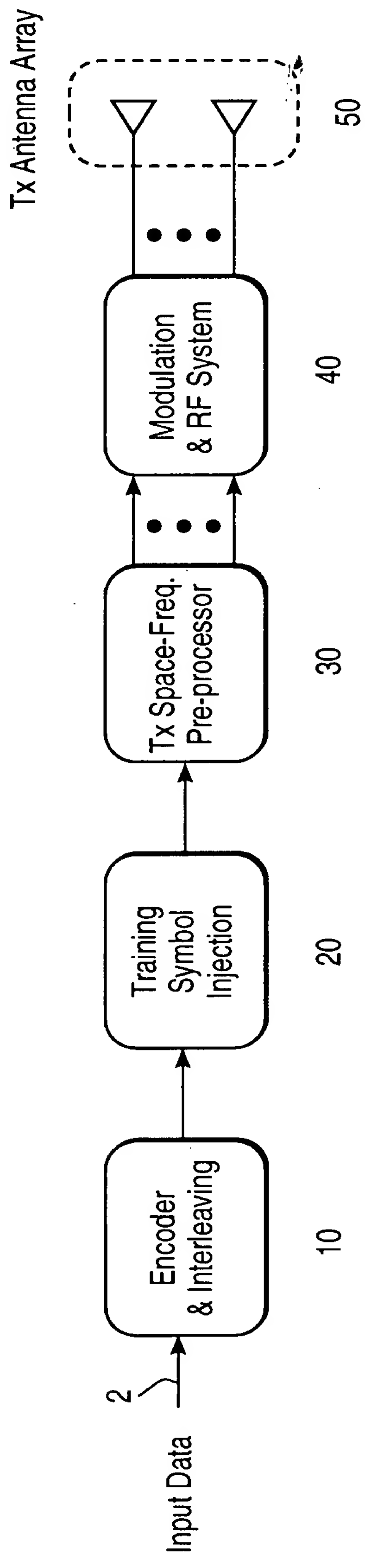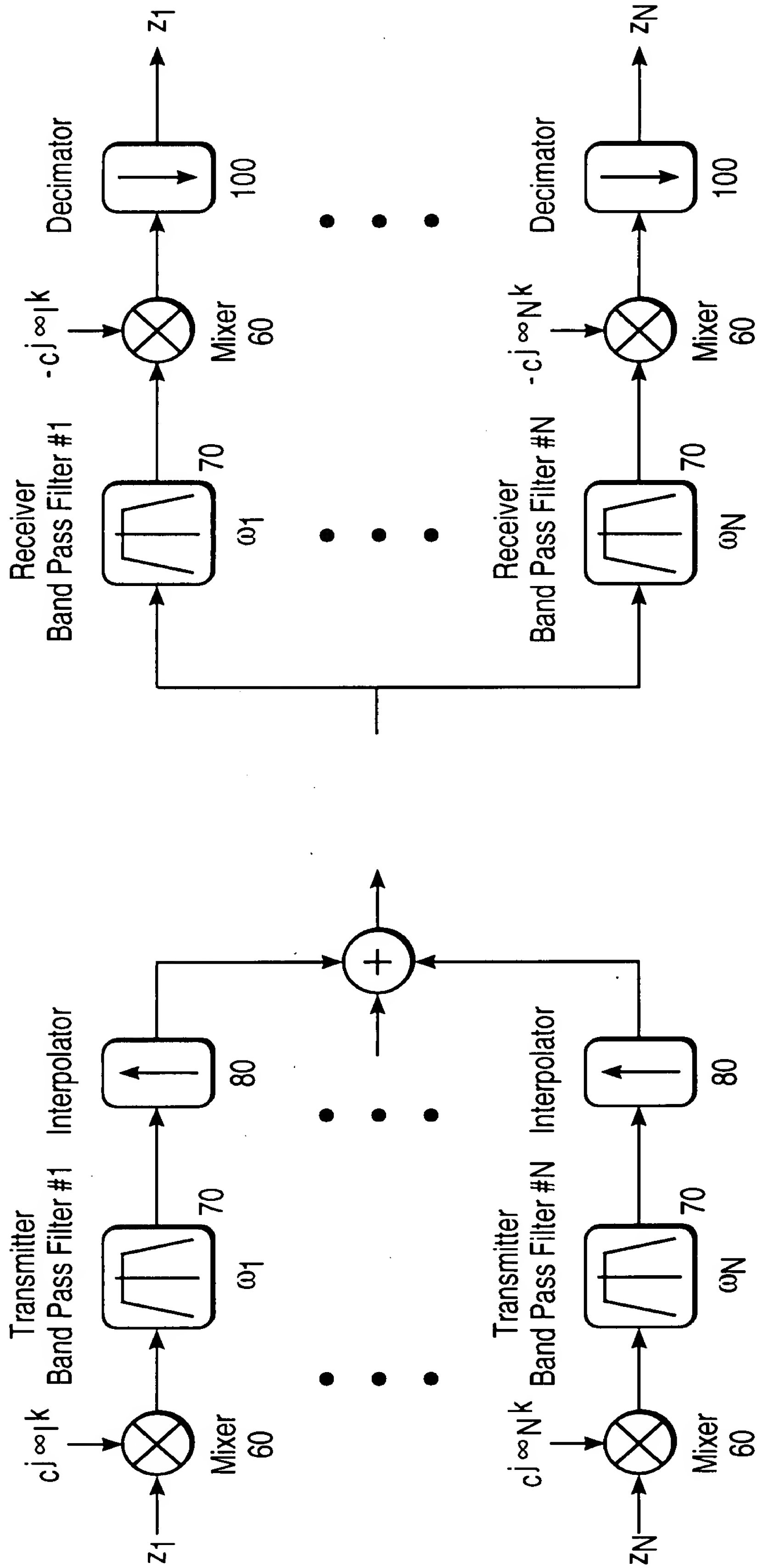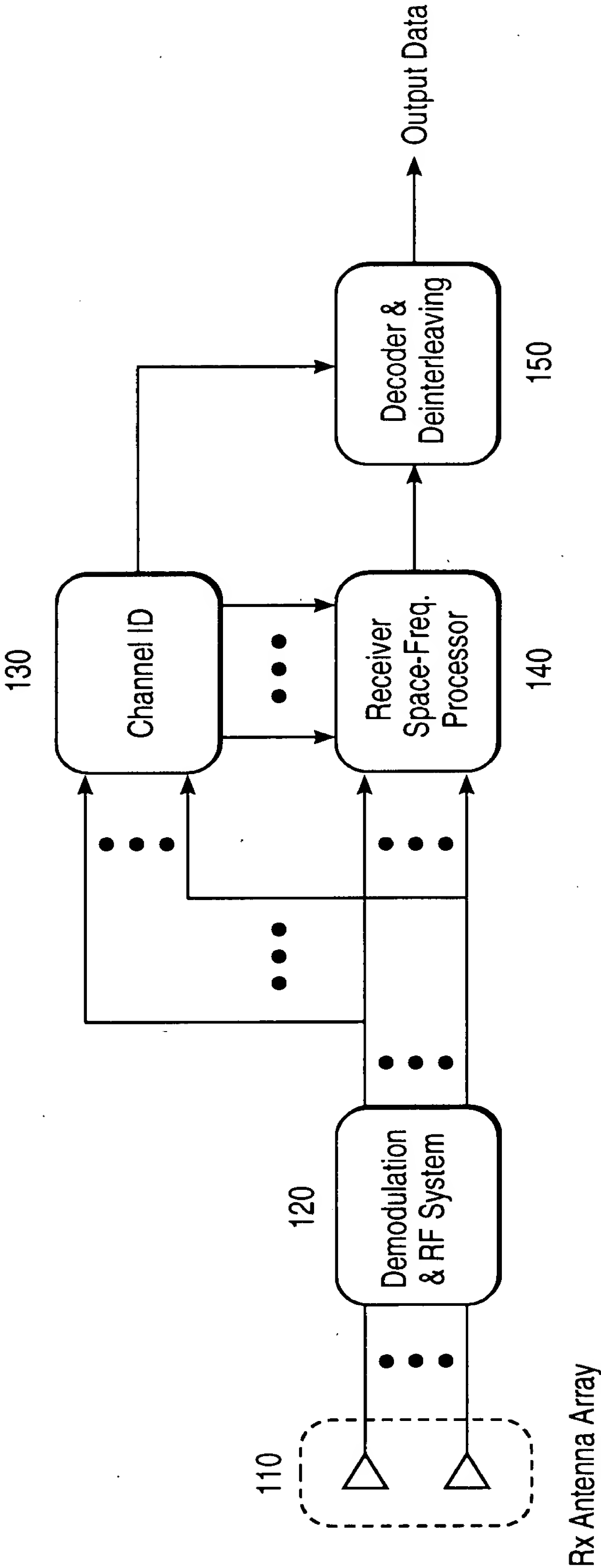| CLASS	SUBCLASS
345	347

Multipath can be more than one reflected or refracted path in a wireless propagation channel with antenna elements that have one polarization.
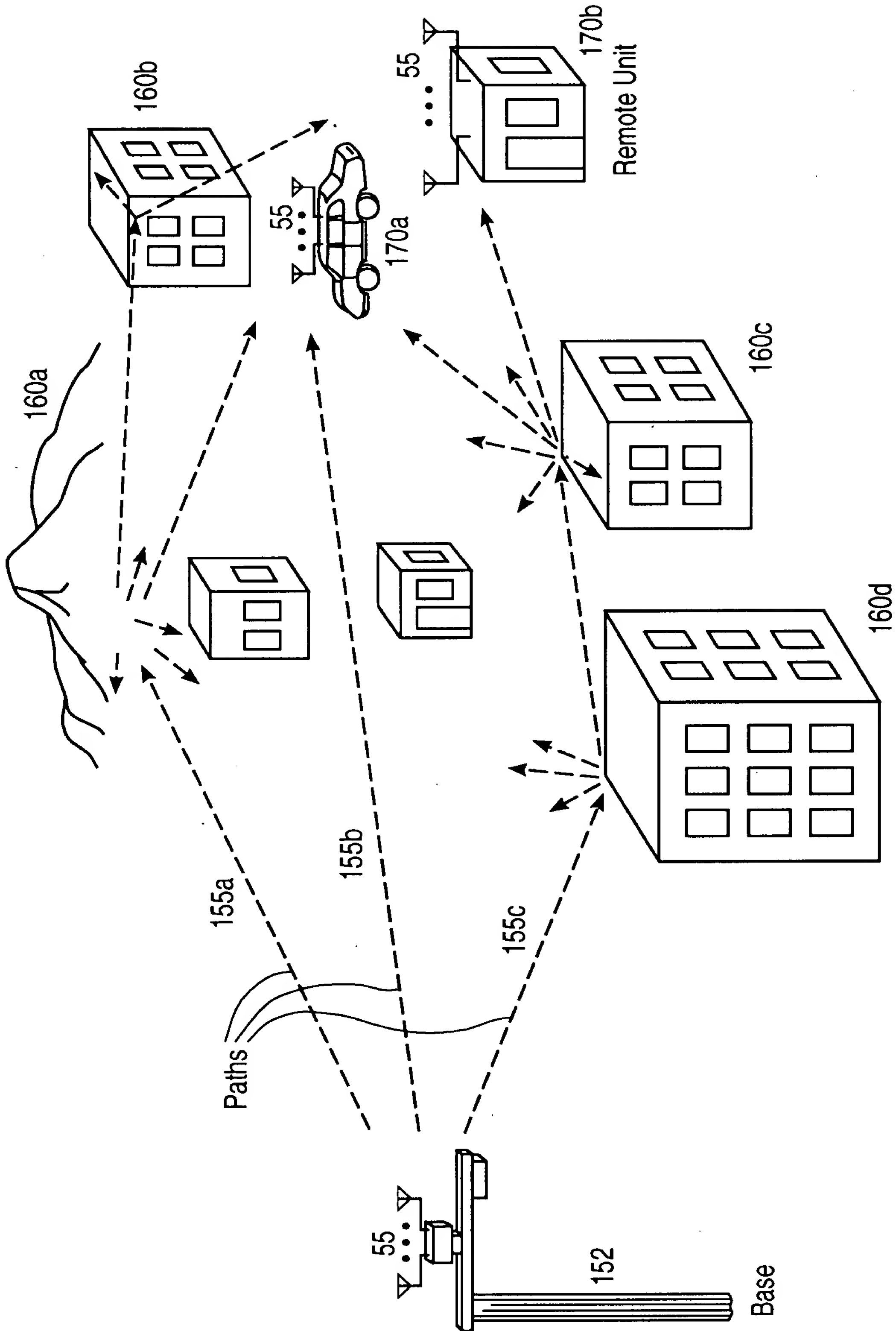
160b

160a

170a

55

55

170b

Remote Unit

160c

160d

155a

155b

155c

Paths

55

152

Base

FIG. 4

Multipath can be one or more paths with polarization A and one or more paths with polarization B. The two sets of paths may or may not be orthogonal.
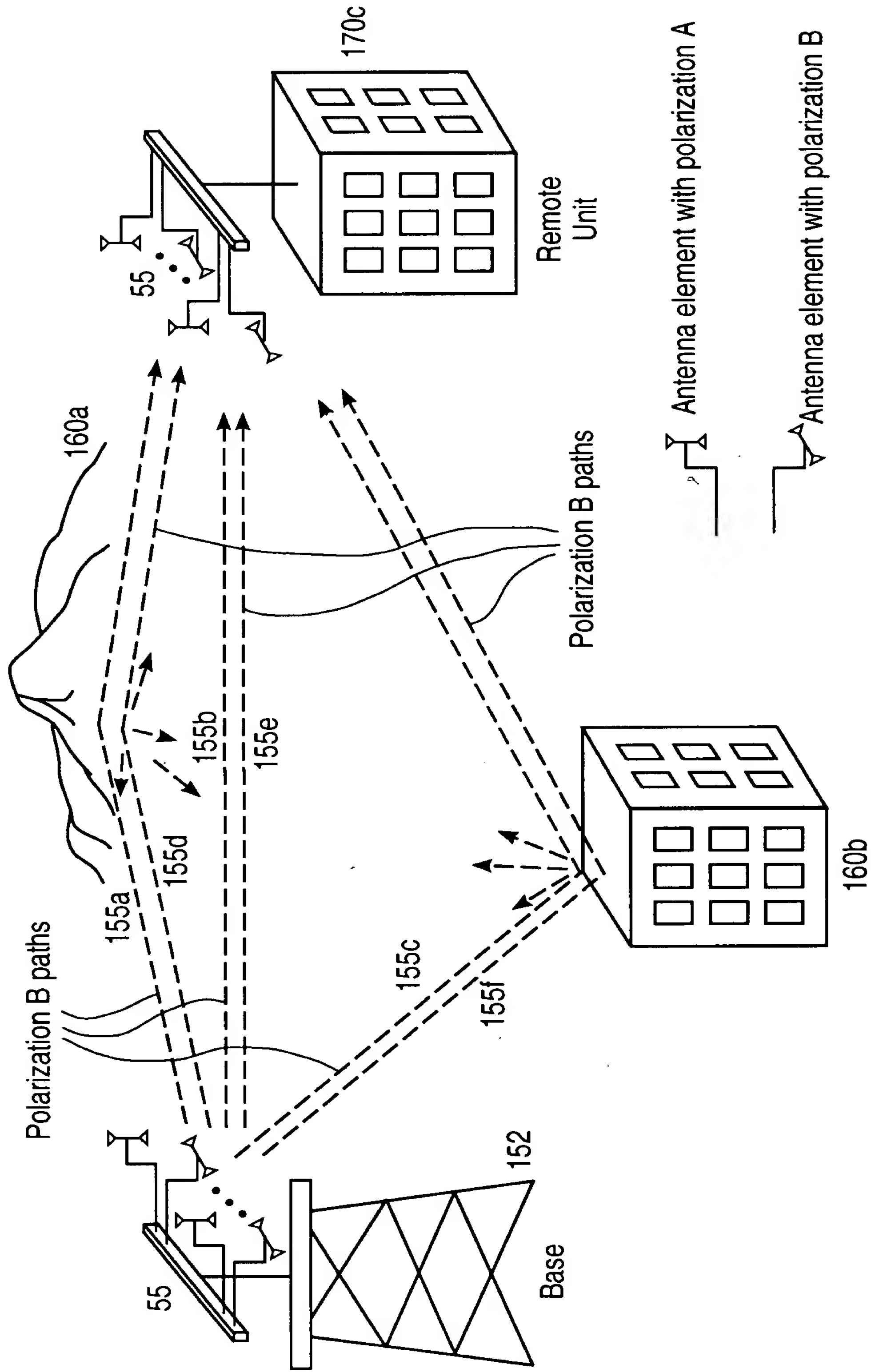
170c

Remote Unit

55

160a

155b
155e
155d
155a

Polarization B paths

Polarization A paths

Polarization B paths

160b

155c
155f

55

152

Base

⊥ Antenna element with polarization A

⊥ Antenna element with polarization B

FIG. 5

Multipath can be more paths between a remote and one radio port and one or more paths between the remote and another radio port.

152b Base
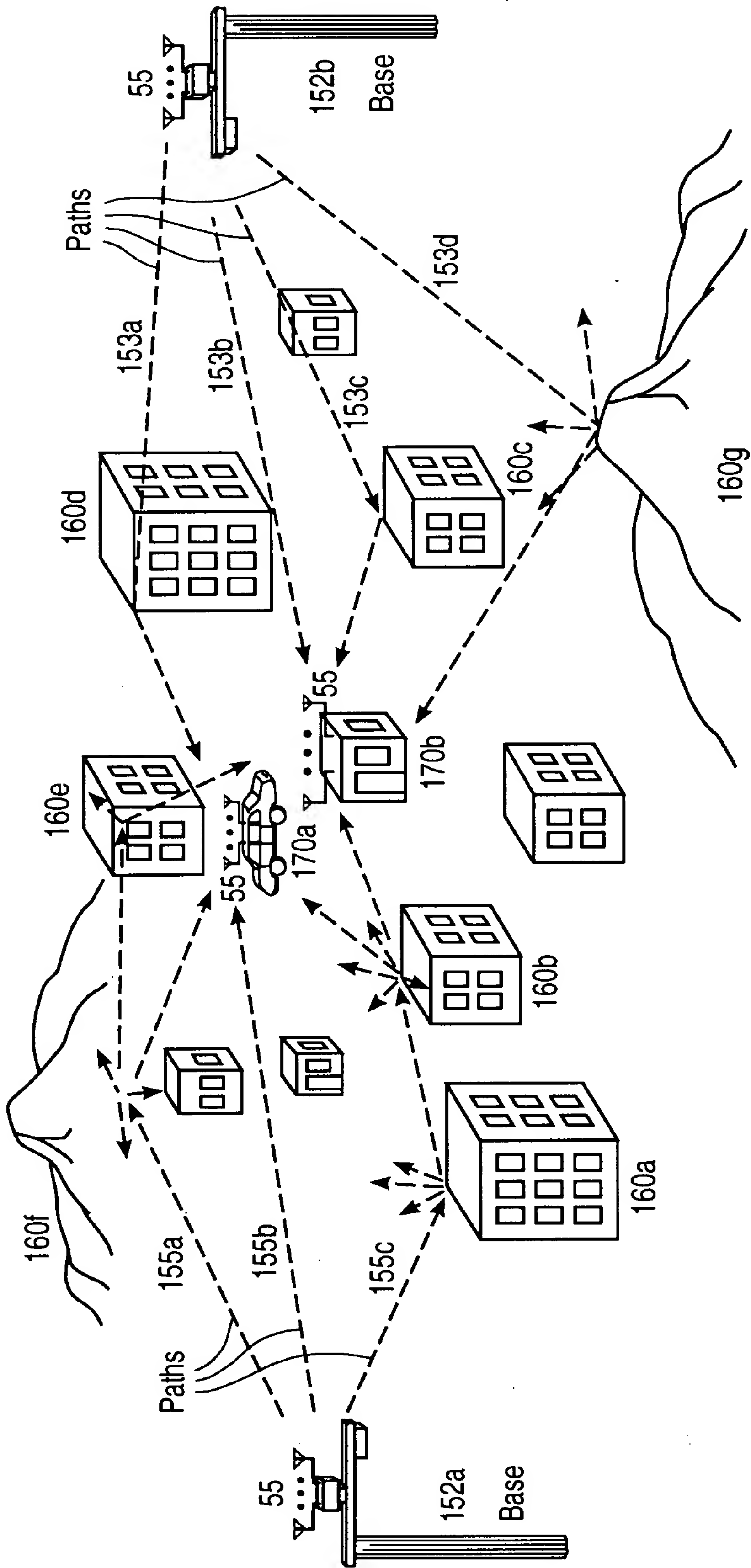
Paths
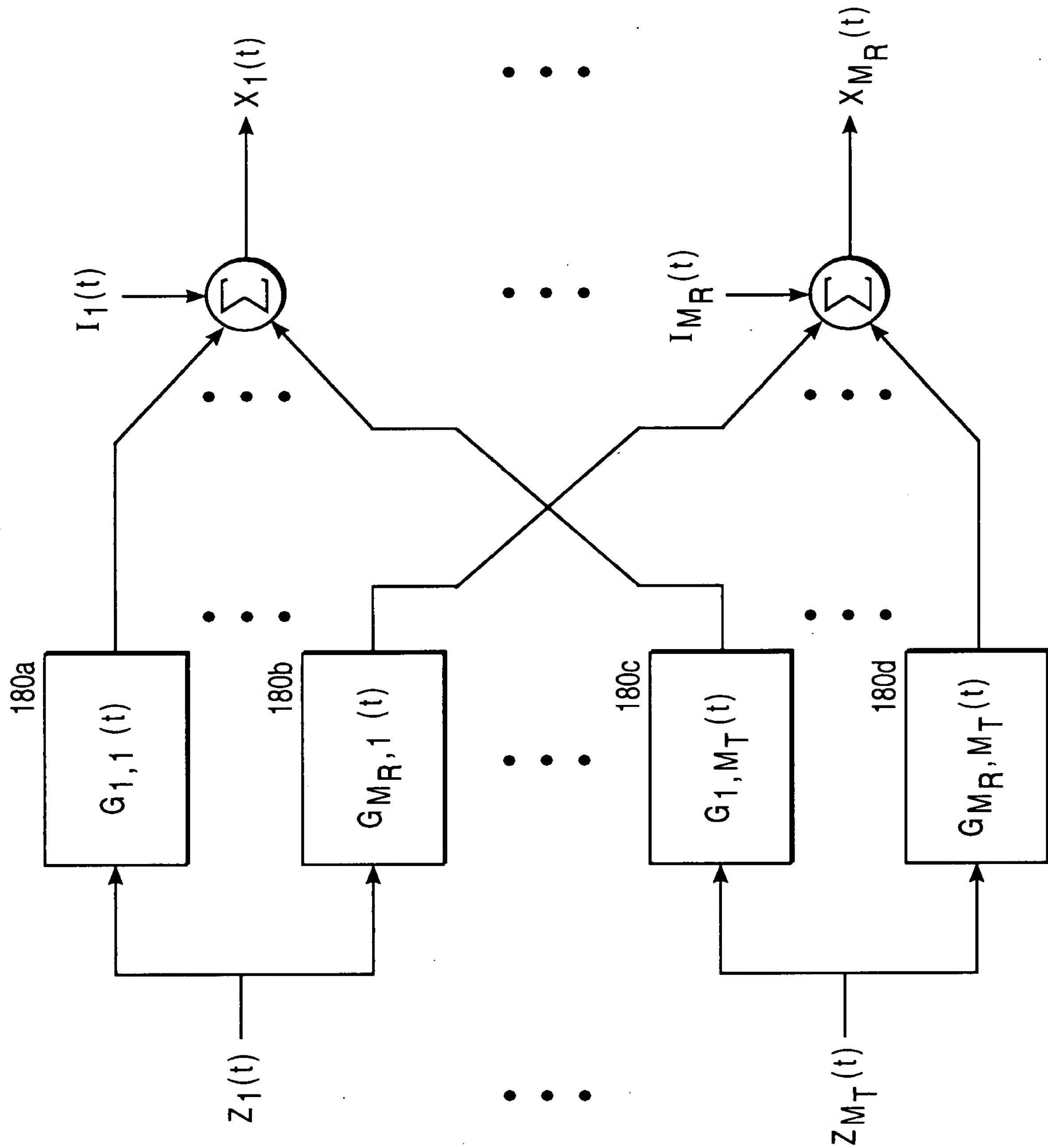
55

153a

153b

153c

153d

160d

160c

160g

160e

55

170a

170b

160b

55

160f

160a

155a

155b

155c

Paths

55

152a Base

FIG. 6

FIG. 7

FIG. 8

Bin 1

Bin N

200 — Receiver SOP #11

120 — Demodulation and RF System #1

111 — Receive Antenna

Bin 1

Bin N

200 — Receiver SOP #M_R

120 — Demodulation and RF System #M_R

111 — Receive Antenna

51 — Transmit Antenna

40 — Modulation and RF System #1

190 — Transmitter SOP #1

Bin 1

Bin N

51 — Transmit Antenna

40 — Modulation and RF System #M_T

190 — Transmitter SOP #M_T

Bin 1

Bin N

FIG. 9

FIG. 10

FIG. 11

$x(1,1)$ $x(1,2)$ $x(1,M)$

220a RSW (1,1)

RSW (1,2) 220b

RSW (1,M) 220c

Receiver Spatial Weights (RSWs)

Receiver Spatial Processor 240

Bin 1   Bin N   Bin 1   Bin N

200 Receiver SOP #1

Receiver SOP #M_R 200

120 Demodulation and RF System #1

Demodulation and RF System #M_R 120

Receive Antenna #1

Receive Antenna #M_R

FIG. 12

FIG. 13

APPROVED BY DRAFTSMAN

O.G. FIG. 14

CLASS	SUBCLASS
375	347

FIG. 14

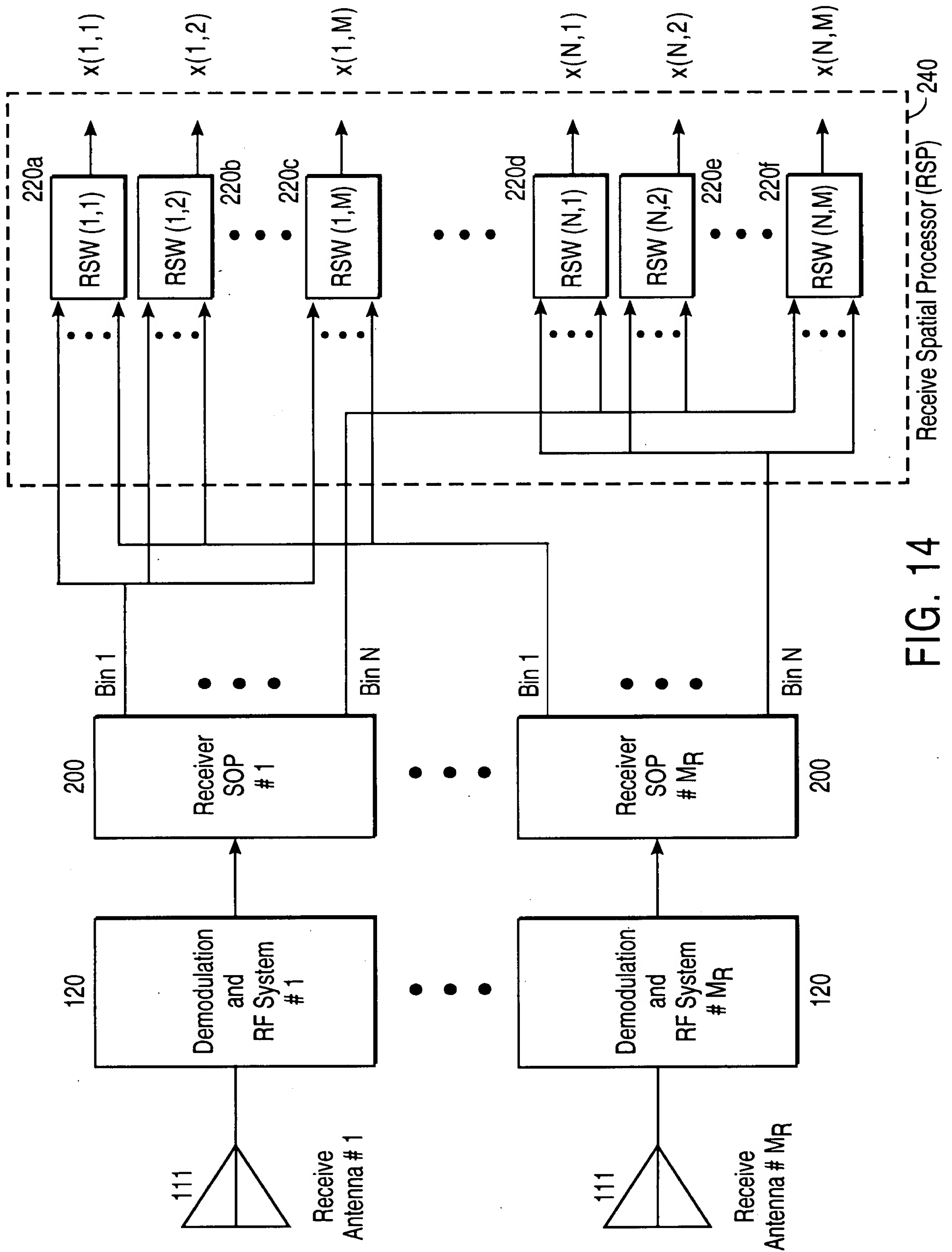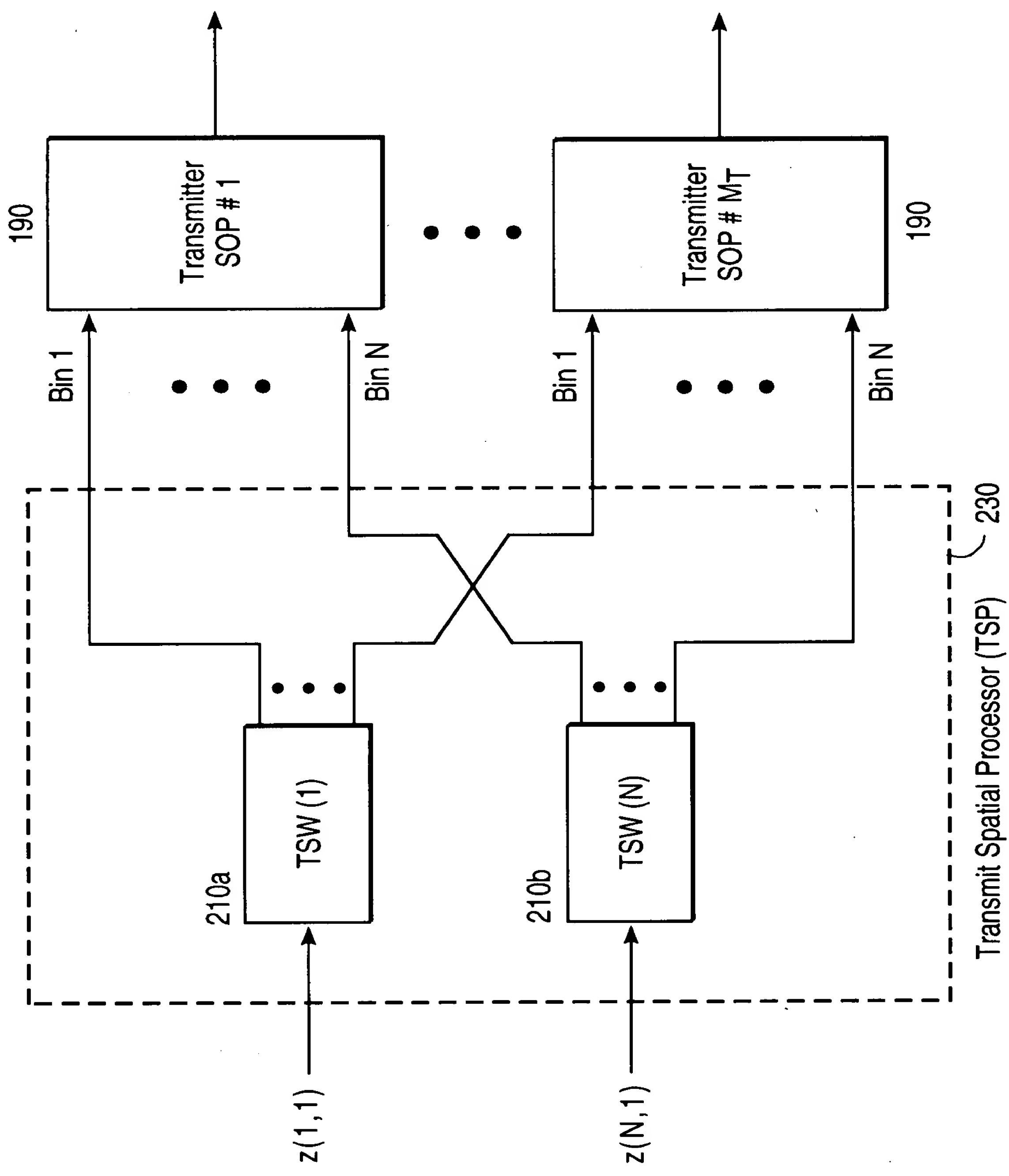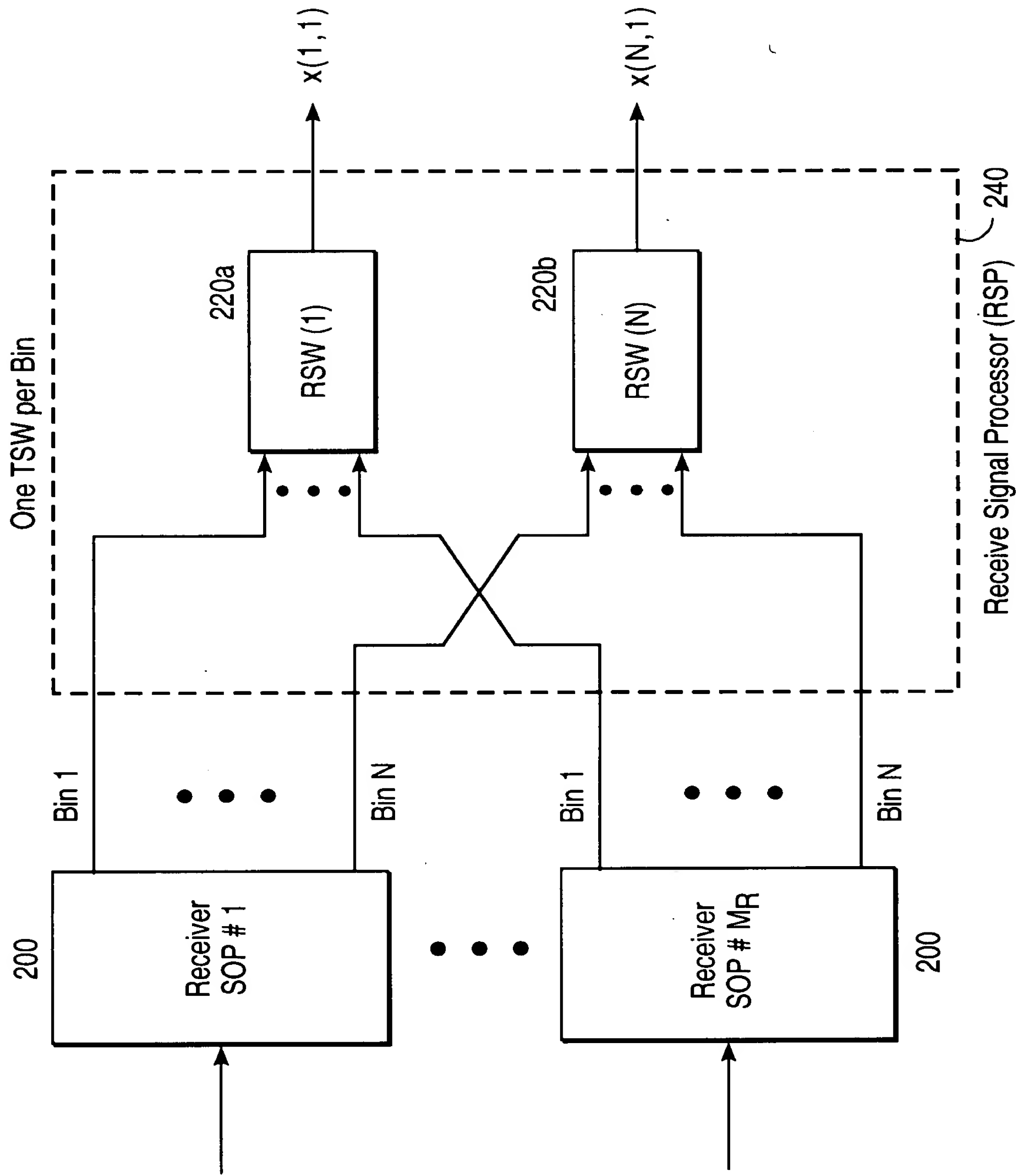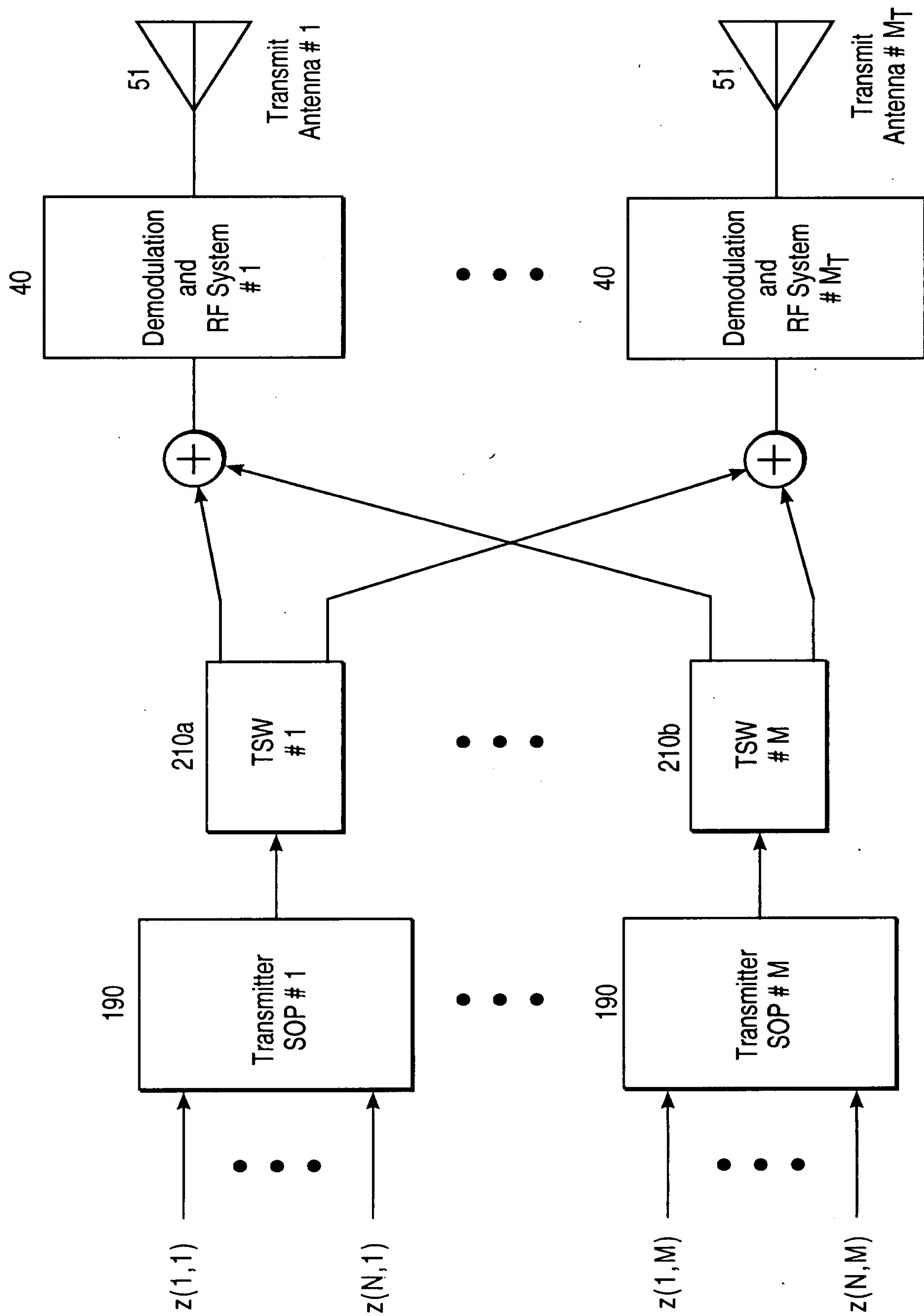| APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 15

Transmit Spatial Processor (TSP)
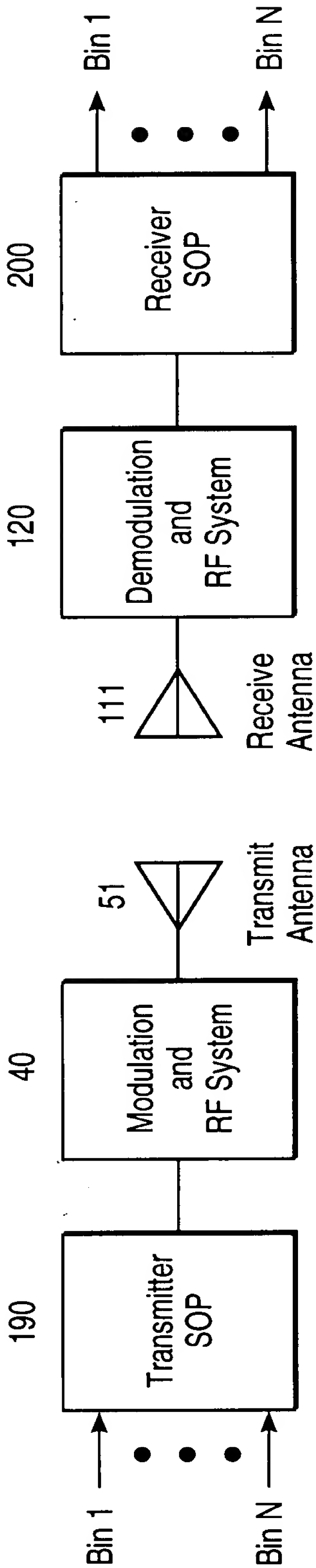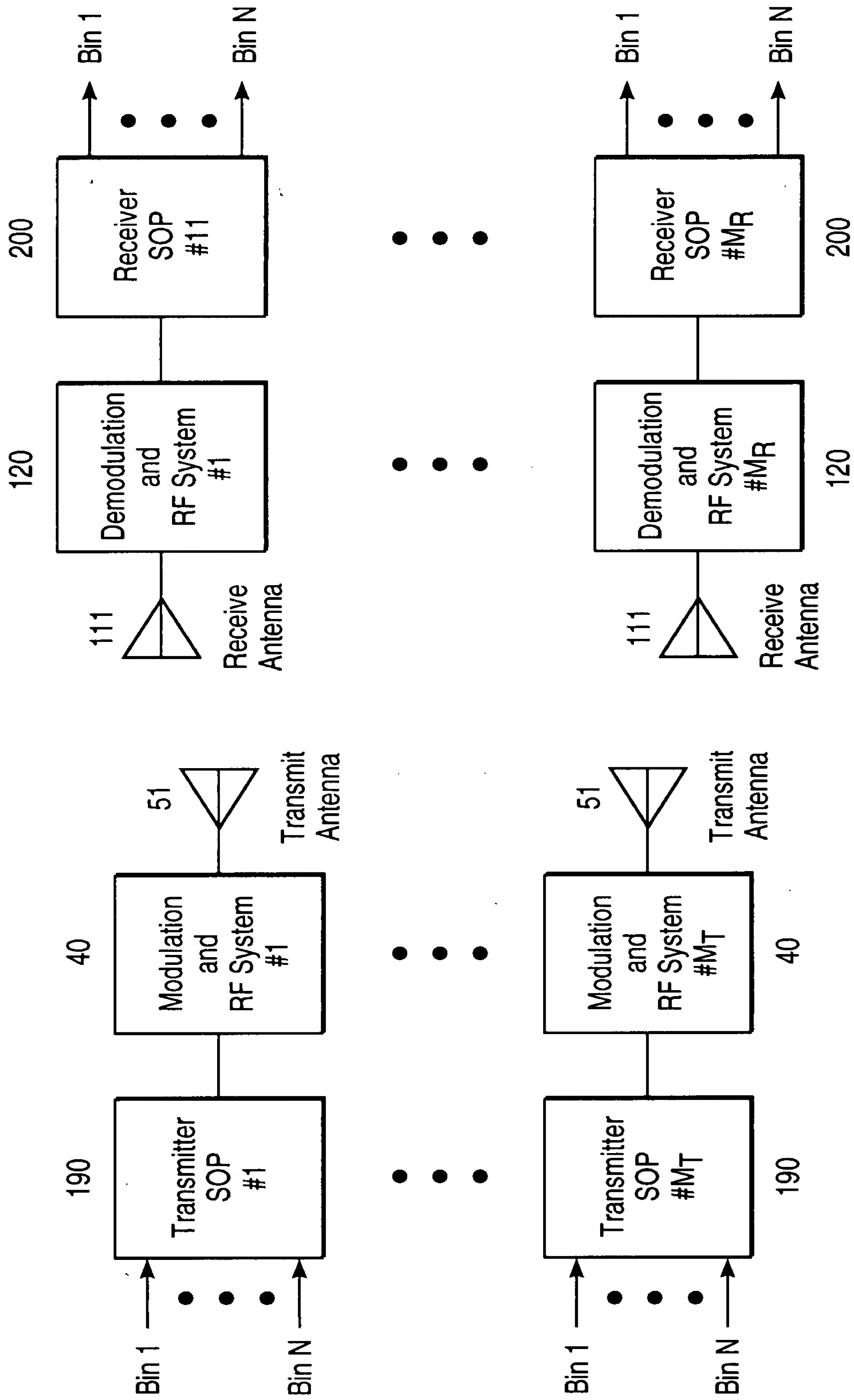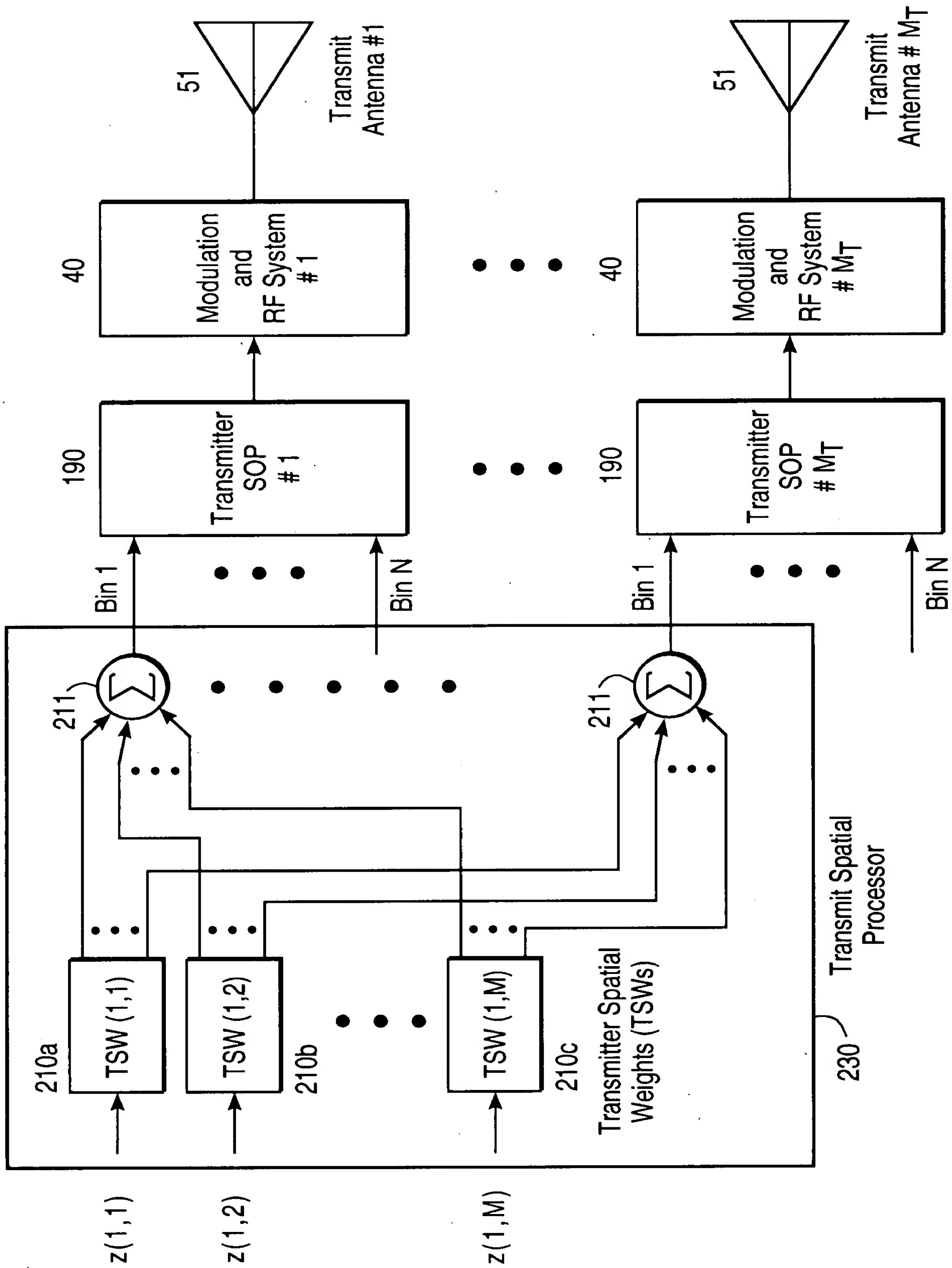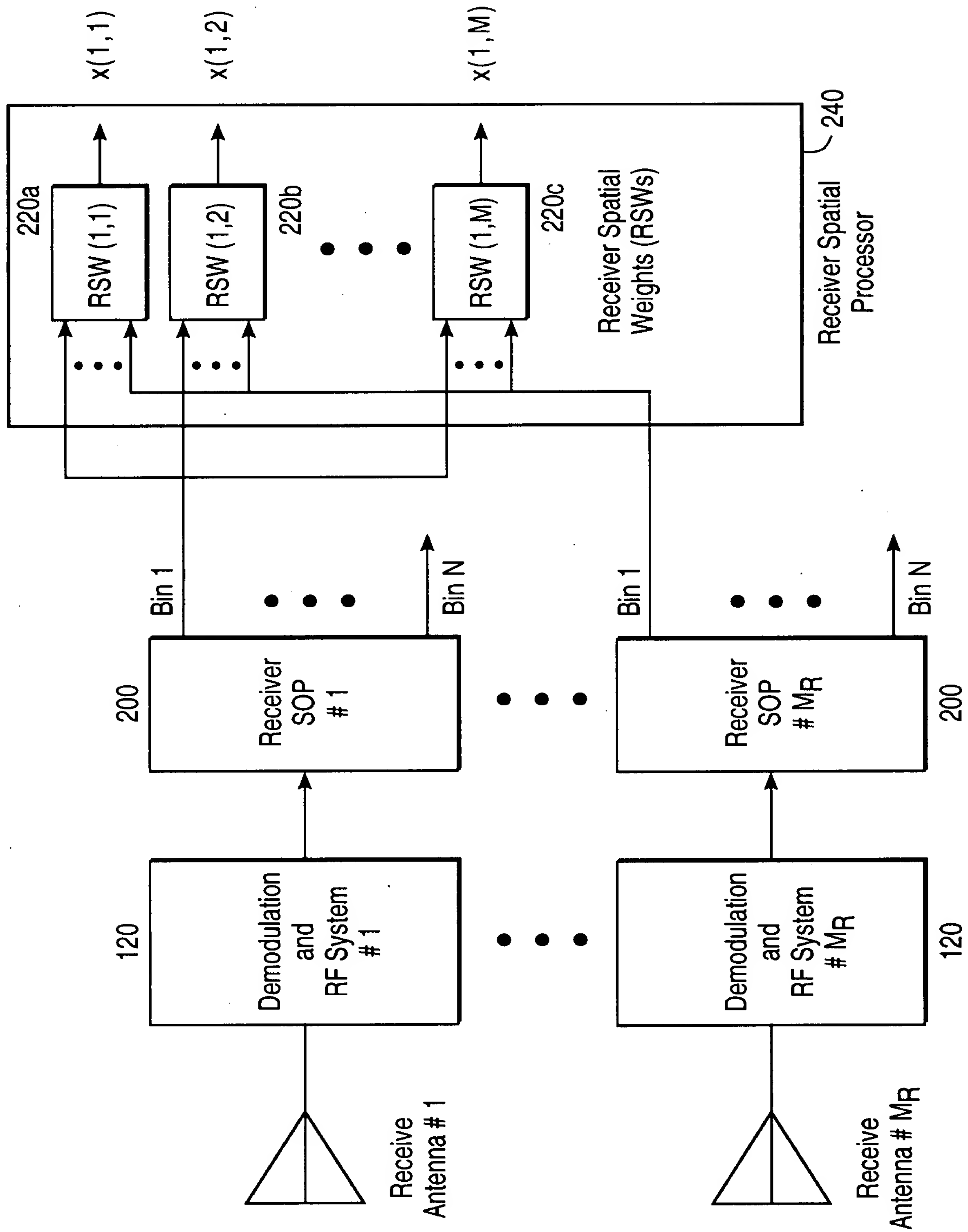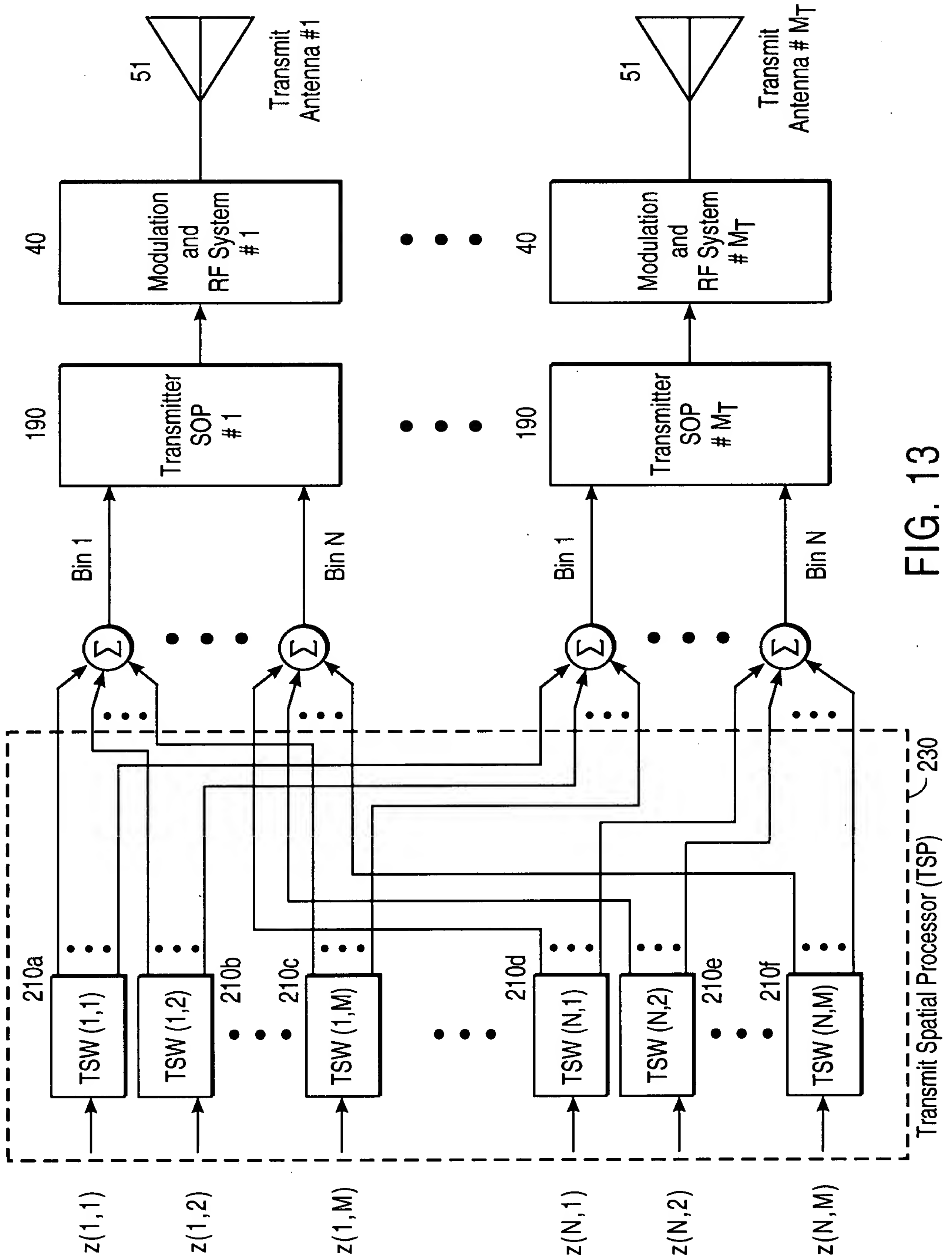
FIG. 16

FIG. 17
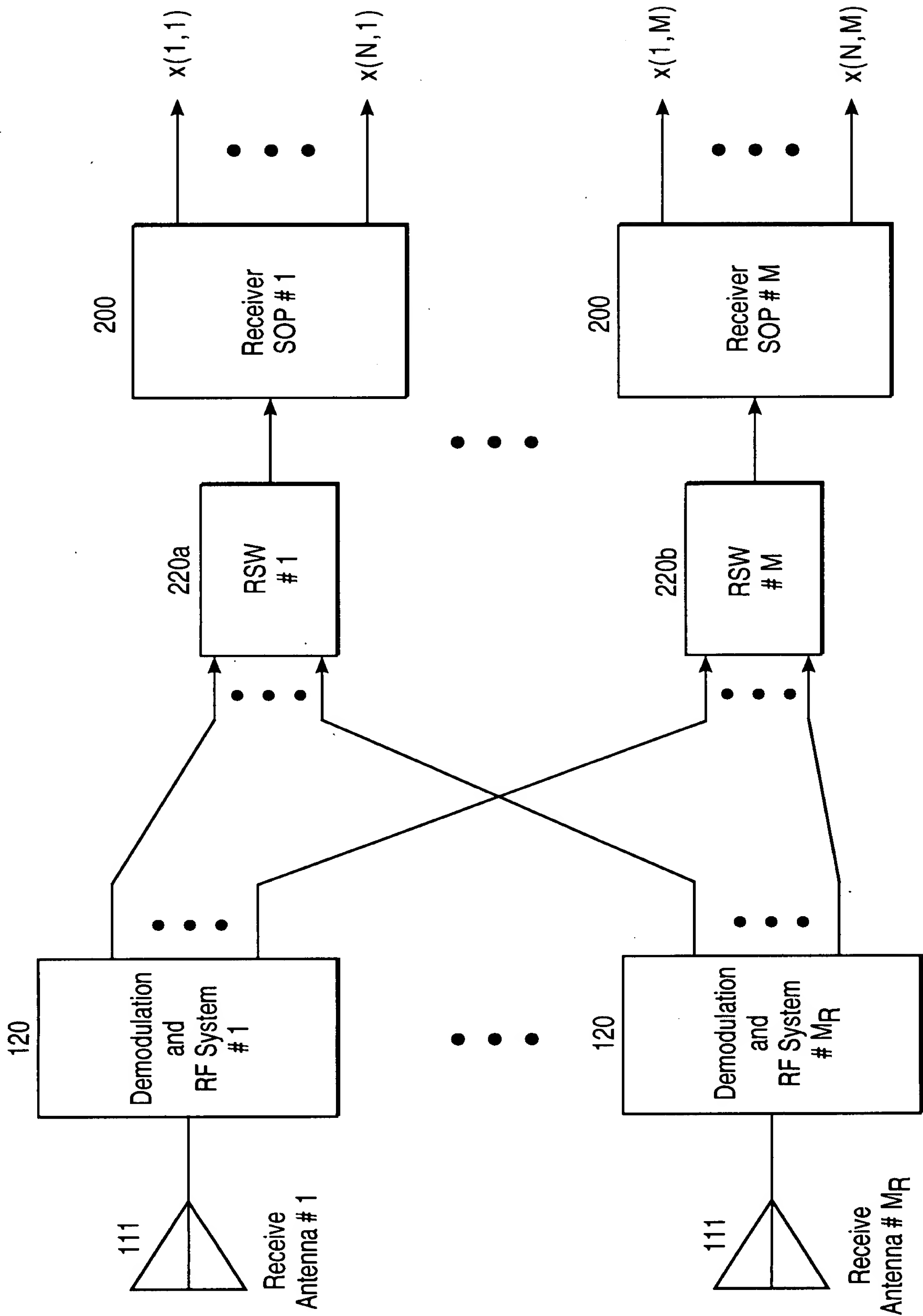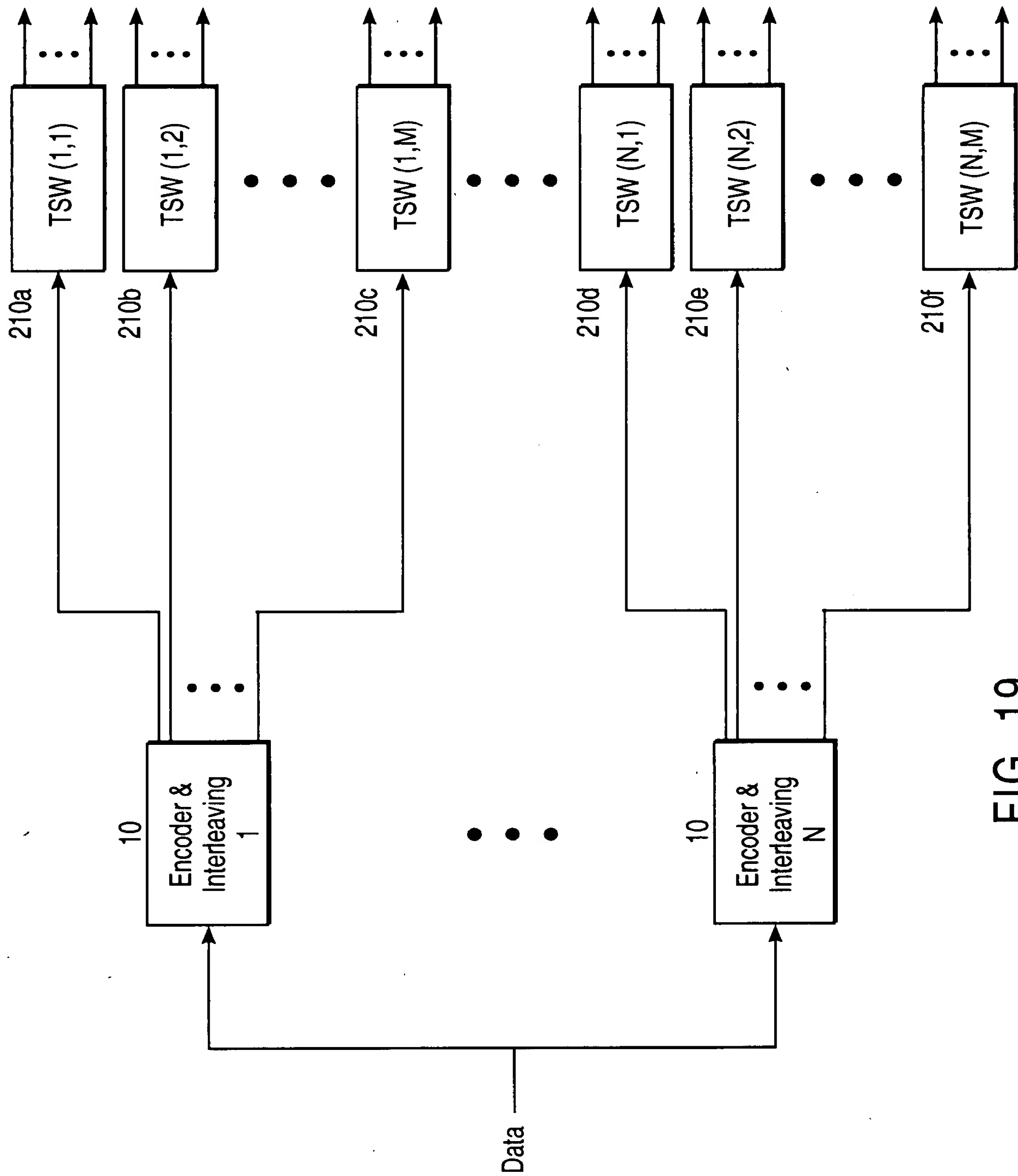
FIG. 18

FIG. 19

FIG. 20

Encoder & Interleaving 1,1 → 210a → TSW (1,1)

Encoder & Interleaving 1,2 → 210b → TSW (1,2)

Encoder & Interleaving 1,M → 210c → TSW (1,M)

Encoder & Interleaving N,1 → 210d → TSW (N,1)

Encoder & Interleaving N,2 → 210e → TSW (N,2)
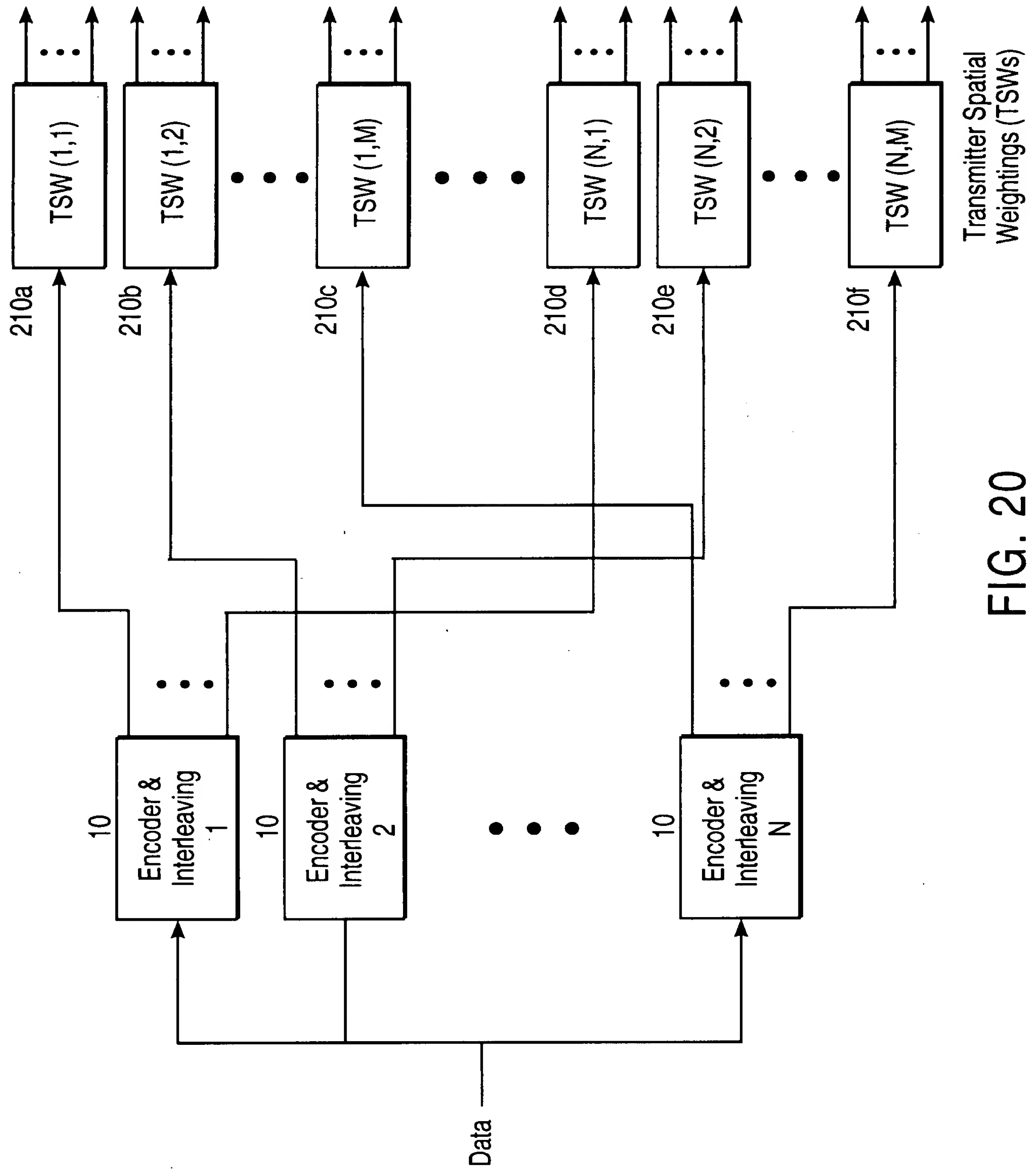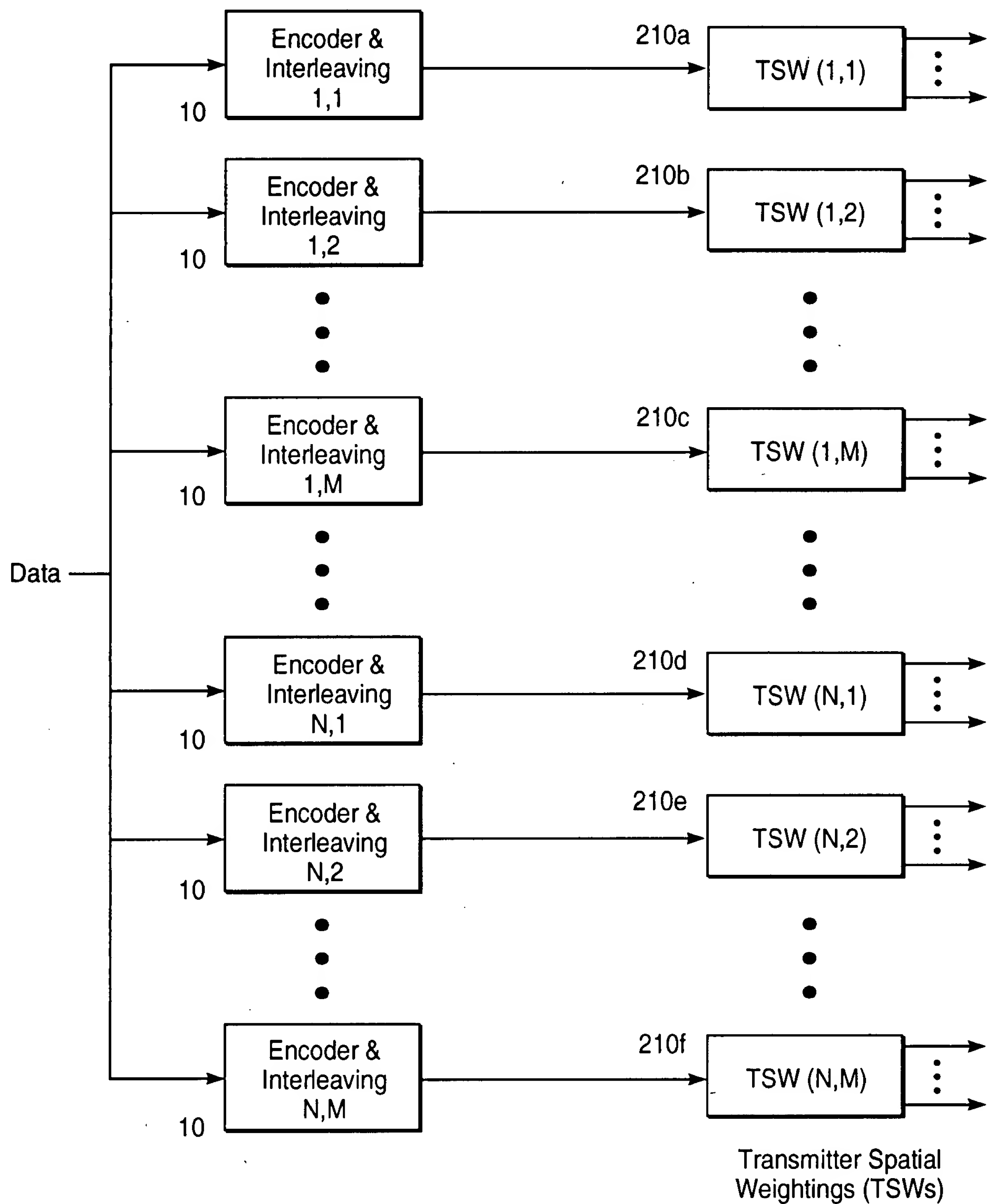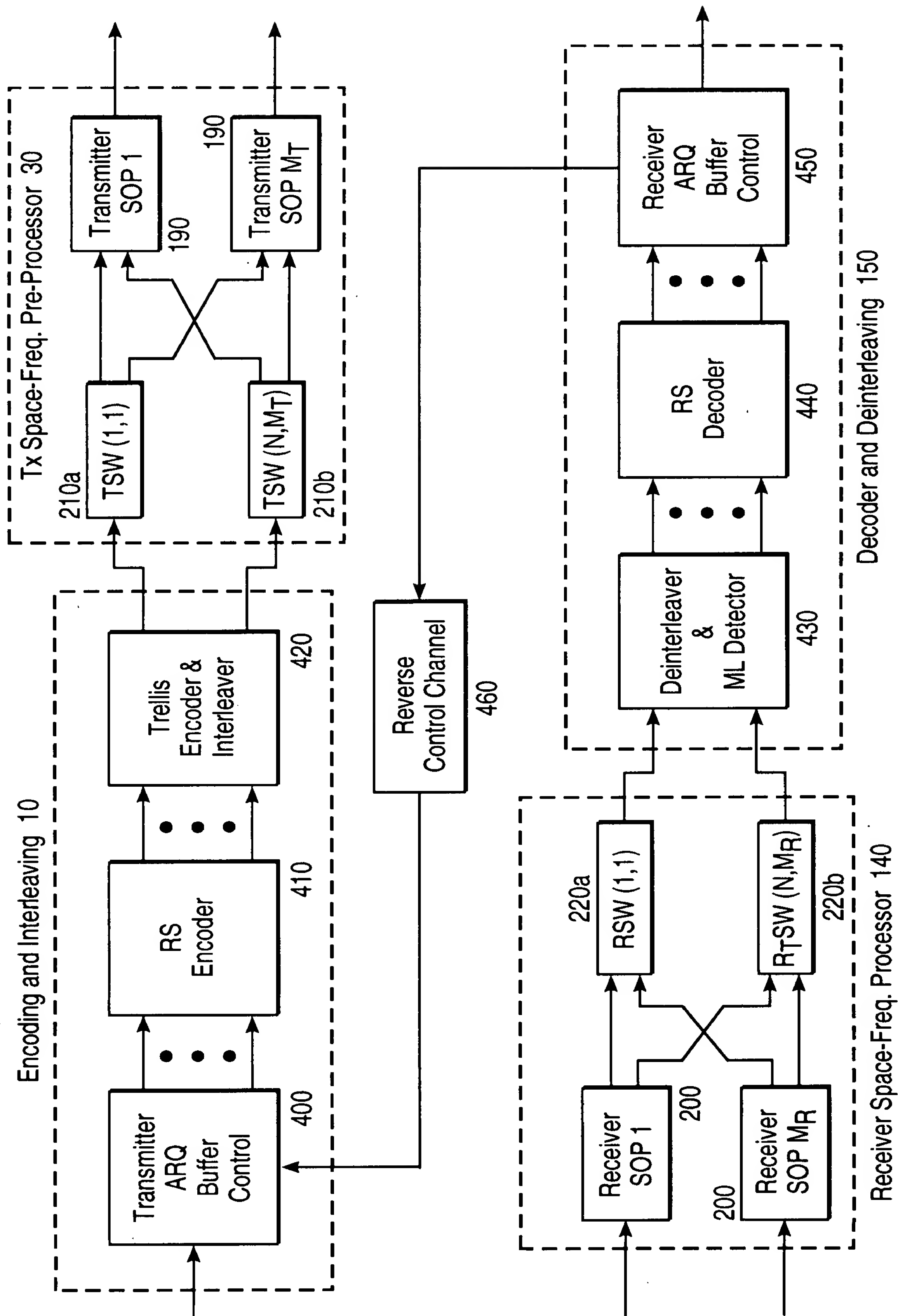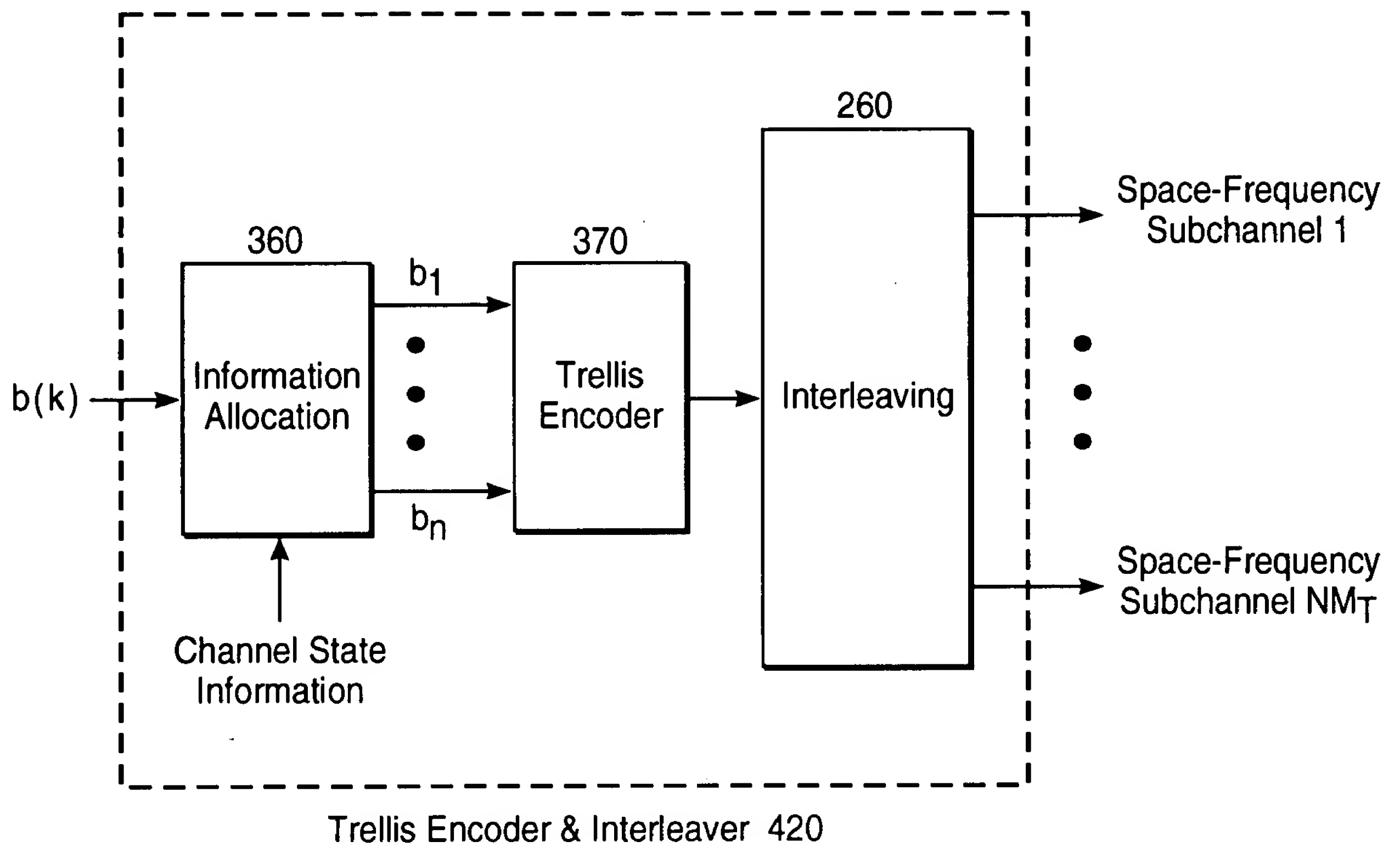
Encoder & Interleaving N,M → 210f → TSW (N,M)

Data

10

Transmitter Spatial Weightings (TSWs)

FIG. 21

FIG. 22

FIG. 23

FIG. 24

$\hat{b}(k)$

Output Bit Sequence

280

Symbol to Bit Decoder

Encoder Output #1

Encoder Output #M_0

320

Symbol Sequence Multiplexor

330

Receiver Symbol Router

Symbol Deinterleaver 270

130

Channel ID

Bin (1,1)

Bin (P,1)

Bin (N,1)

Bin (1,M_0)

Bin (P,M_0)

Bin (N,M_0)

200

Receiver SOP #1

200

Receiver SOP #M_0

240

Receiver Spatial Processor

120

Demod-ulation and RF System #1

120

Demod-ulation and RF System #M_R

111

Receive Antenna #1

111

Receive Antenna #M_R

FIG. 25

FIG. 26